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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,656	05/30/2001	Sung-Il Park	8733.434.00	5149
30827	7590	12/15/2003	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			QI, ZHI QIANG	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			2871	

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/866,656	PARK ET AL.	
	Examiner	Art Unit	
	Mike Qi	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 and 24 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 22-24 are objected to because of the following informalities:

The claims 22-24 are dependent on the claim1 respectively. However, the claim 1 is not a method claim. The method independent claim is claim 20. Therefore, the claims 22-24 should be changed into - - The method according to claim 20, . . . - -
Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 24, recitation" . . . wherein a gate low voltage is transmittable by the first gate transmitting line" is indefinite. Because the gate low voltage is transmittable by the first gate transmitting line that indicates the first transmitting line can or may transmit the gate low voltage, but it does not indicate the definite function of the first gate transmitting line. For examination purpose, it is interpreted as the first gate transmitting line serves as transmitting the low scanning signal such as a low scanning waveform signal.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art (AAPA) in view of US 5,748,179 (Ito et al) or US 5,739,880 (Suzuki et al) or US 6,429,908 (Lim).**

Claims 1, 14, 20-22 and 24, AAPA discloses (paragraph 0002 – 0028; Figs.1-6) that generally, a liquid crystal display device having a liquid crystal panel comprising:
(concerning claims 1, 14 and 20)

- a first (lower) substrate (20), a second (upper) substrate (10), the first (lower) substrate (20) having a plurality of source pads (30 of Figs.3 - 4) and gate pads (28 of Figs.3 - 4) (because the FPC 40 as the gate transmitting lines formed on the lower substrate 20), and the first (lower) and second (upper) substrates (20, 10) being attached;
- a first printed circuit board (source PCB 33) connected to the plurality of source pads (30 of Fig.4), and the source PCB (33) applying signals to the source pads (30 of Fig.4);
- a second printed circuit board (gate PCB 31) connected to the plurality of gate pads (28 of Fig.4), and the gate PCB (31) applying signals to the gate pads (28 of Fig.4);

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- a plurality of gate transmitting lines (FPC 40 transmits the gate signals) formed directly on the lower substrate (20) and connecting the gate pads (28 of Fig.4) with the source pads (30 of Fig.4), the plurality of gate transmitting lines (FPC 40) transmitting signals from the source PCB (33) to the gate PCB (31) via the gate transmitting lines (FPC 37 or 40);

(concerning claims 21-22 and 24)

- the gate transmitting lines (FPC 40) transmits the gate signals, inherently, one of the gate transmitting lines transmits a gate voltage signal (the lowest voltage must be transmitted by the first transmitting line), and that must include a gate low voltage scanning signal,

AAPA does not expressly disclose one of the gate transmitting lines has a resistance that is less than the other gate transmitting lines (or the gate transmitting lines comprise two resistances) as claimed in claims 1, 14, 20, 22 and 24, and one of the gate transmitting lines has a resistance of below 30 Ω as claimed in claim 21.

However, Ito discloses (col.4, lines 20-45; Fig.1-4) that the input wire (Td) to the driving IC (transmitting gate driving signal) comprises a first conductive film (g1) and a second conductive film (d2), and the first conductive film (g1) is formed of low-resistance metal such as Al-Ta or the like and the second conductive film (d2) is formed of low-resistance metal such as Cr or the like. Because the metal Al and Cr are different metal material and that must have different resistivities and different resistances.

Furthermore, Lim discloses (col.2, lines 51-54) that the aluminum (Al) is a low resistance metal and the chromium (Cr) is a high resistance conductive metal relatively, and that is conventional.

Ito also discloses (col.7, line 56 – col.8, line 13; Fig.5) that the resistance value from the connection portion of the input wire (Td) with the flexible board to the input terminal (IP) is equal to several ohms. Further, the input terminal portion itself is required to have a resistance value of several ohms. Therefore, the signal transmitting lines in LCD are required to have a resistance value of several ohms that is below 30 ohms.

Ito also indicates (col.16, lines 17 – 34) that larger resistance occurs at the gate side and at the drain side would cause the distortion amount of the output waveform of the driving IC is varied every wiring, and this finally causes unevenness of a display image. Therefore, it is necessary to reduce the resistance of the signal transmitting lines in order to reduce the signal distortion such as a cross-talk.

Furthermore, Suzuki discloses (col.12, lines 5-27; Fig.7) that it is necessary to reduce the resistance of the output wiring (i.e., the signal transmitting lines), because the signal waveform propagation delay is dependent on the resistance of the signal transmitting lines such as the gate lines and the capacitance loaded upon the signal transmitting lines such as the gate lines (i.e., the RC constant). Therefore, the larger resistance of the signal transmitting line would cause larger signal propagation delay, and that would cause signal waveform distortion, and unevenness of a display image.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange one of the gate transmitting lines having different resistances as claimed in claims 1, 14, 20, 22 and 24, and one of the gate transmitting lines having a resistance of below 30 ohms as claimed in claim 21 for preventing the unevenness of a display image, i.e., to reduce the resistance of the signal transmitting lines in order to reduce the signal distortion such as a cross-talk.

Claims 2 and 15, AAPA discloses (paragraph 0015-0019; Figs.3 - 4) that the plurality of gate transmitting lines (40) include at least eight signal lines for transmitting signals from the source PCB (33) to the gate PCB (31).

Claims 3-9 and 16-17, AAPA discloses (paragraph 0015-0019; Figs.3-4) that the gate transmitting lines (FPC 37 or 40 transmits the gate signals) include Vcom (common voltage signal line); Vgh (gate high voltage signal line); Vgl (gate low voltage signal line); Gsc and Goe (to control the signal passing through the gate line); Gsp (to control the drive IC); Vcc (power line) and Vdd (ground line).

Claims 10-12 and 18-19, AAPA discloses (paragraph 0023) that dummy pads are preferably formed in gaps between adjacent gate pads (28) and between adjacent source pads (30), so as to prevent an abnormal electrical interaction between the adjacent gate transmitting wires, and that would have been at least obvious.

Claim 13, AAPA discloses (paragraph 0020; Fig.3) that a plurality of connecting wires (i.e., the FPC 40 transmitting gate signals as the gate transmitting lines) are formed directly on the lower substrate (20).

Allowable Subject Matter

6. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record neither discloses nor teaches a liquid crystal display panel comprising various elements as claimed, more specifically, as the following:

The gate transmitting lines having a first resistance value for the first gate transmitting line and a second resistance value for the other gate transmitting lines, and the first resistance value is less than the second resistance value which is about 100 Ω .

The closest reference Ito discloses that the gate transmitting lines having different resistances such as several ohms, but none of the prior art of record teaches that the second resistance value is about 100 Ω as claimed in claim 23.

Response to Arguments

7. Applicant's arguments filed Sep.17, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) None of the references teach or suggest a first gate transmitting line of the plurality of gate transmitting lines has a first resistance wherein the gate transmitting lines other than the first transmitting line have a second resistance, and wherein the first

resistance is less than the second resistance, or in other words, the plurality of gate transmitting lines comprises two resistances.

2) The related art discloses such as Figs.1-6 that is not a prior art.0

Examiner's responses to Applicant's **only** arguments are as follows:

1) The reference Ito discloses (col.4, lines 20-45; Fig.1-4) that the input wire (Td) to the driving IC (transmitting gate driving signal) comprises a first conductive film (g1) and a second conductive film (d2), and the first conductive film (g1) is formed of low-resistance metal such as Al-Ta or the like and the second conductive film (d2) is formed of low-resistance metal such as Cr or the like. Because the metal Al and Cr are different metal material and that must have different resistivities and different resistances.

Further, Lim discloses (col.2, lines 51-54) that the aluminum (Al) is a low resistance metal and the chromium (Cr) is a high resistance conductive metal relatively, and that is conventional. Ito also discloses (col.7, line 56 – col.8, line 13; Fig.5) that the resistance value from the connection portion of the input wire (Td) with the flexible board to the input terminal (IP) is equal to several ohms. Further, the input terminal portion itself is required to have a resistance value of several ohms. Therefore, the signal transmitting lines in LCD are required to have a resistance value of several ohms that is below 30 ohms.

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image. Therefore, it is necessary to reduce the resistance of the signal transmitting lines in order to reduce the signal distortion such as a cross-talk.

Furthermore, Suzuki discloses (col.12, lines 5-27; Fig.7) that it is necessary to reduce the resistance of the output wiring (i.e., the signal transmitting lines), because the signal waveform propagation delay is dependent on the resistance of the signal transmitting lines such as the gate lines and the capacitance loaded upon the signal transmitting lines such as the gate lines (i.e., the RC constant). Therefore, the larger resistance of the signal transmitting line would cause larger signal propagation delay, and that would cause signal waveform distortion, and unevenness of a display image.

2) The invention must be based on a related art and which is existing in the prior art. Therefore, the related art must be a prior art.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

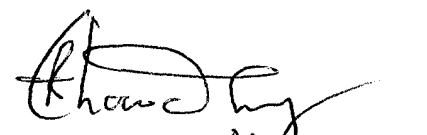
extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213. .

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
December 3, 2003


T. Choudhury
Primary Examiner